

3.15 HAZARDOUS MATERIALS AND PUBLIC SAFETY

This section addresses hazardous materials and public safety impacts associated with implementation of the SELRP. Flooding and flood hazards are discussed in Section 3.2 (Hydrology). Sediment and chemical composition of dredged material are discussed in Section 3.4 (Water and Aquatic Sediment Quality); however, this section does discuss these issues in terms of the potential exposure of contaminants to people and the environment. This section is derived from the following technical studies: SAP (M&N 2013, Appendix A) and the Geotechnical Data Report (Appendix M). Specific vector-related information is provided by the Clarification Narrative for Vector Habitat Remediation Program (SELC 2012).

3.15.1 AFFECTED ENVIRONMENT

San Elijo Lagoon Study Area

Hazardous Materials and Public Safety

The San Elijo Lagoon study area is not listed as a hazardous materials site on State of California Hazardous Waste and Substances lists compiled pursuant to Government Code Section 65962.5, and there are no known sites located in the immediate vicinity of the project area (DTSC 2013). However, the lagoon is at the terminus of the Escondido Creek watershed, which encompasses approximately 84 square miles and largely consists of a mixture of developed uses, agriculture, rural housing, open space, and vacant land (SELC 2005). Runoff from the watershed into the lagoon can contain contaminants that can settle into sediments as well, particularly those associated with agricultural and household use, including fertilizers and cleaning agents.

In addition, San Elijo Lagoon has historically been subjected to a number of different activities that could have resulted in contaminated soils within the lagoon, including the discharge of treated sewage into the lagoon's former settling ponds located in the western portion of the central basin, a practice that occurred from 1940 to 1973 (SELC 2013). Currently, treated sewage passes through the lagoon via an underground pipeline maintained by the San Elijo Joint Powers Authority (refer to Section 3.14 [Public Services and Utilities] for a complete discussion related to utilities within the lagoon).

Hazardous materials used on-site or introduced to the site from other locations can lead to contaminated sediments within the lagoon, which may be a concern as soil disturbance and export are proposed. The SAP (Appendix A) prepared for the project characterized all proposed dredge sediments within the lagoon. However, the report emphasized chemical and physical results from the overdredge pit, as proposed in Alternative 2A and Alternative 1B, as these

materials represent the beneficial reuse component of the project. Chemical analysis of materials in the overdredge pit area found the upper layer to contain some detectable levels of DDD, DDE, and DDT. The northern portion of the overdredge pit was also found to contain some detectable levels of polychlorinated biphenyls (PCBs). Re-sampling of this area found no detectable levels of PCBs; thus, the initially reported levels were determined to be a result of lab error. As detailed in the SAP (Appendix A), based on initial and follow-up correspondence with EPA and the Corps (Webb 2012), these results were not at levels high enough to trigger a concern for the on-site placement of dredged wetland sediments within the overdredge pit or beneficial reuse of sandy sediment extracted from the overdredge pit. To date, the proposed disposal/reuse areas have not been approved by the Corps or EPA; however, a SAP was prepared for the SELRP (Appendix A). Both the Corps and EPA determined that the testing in the SAP is consistent with the ITM testing procedures, which address lagoon-dredged material-placement options such as nearshore and onshore placement, direct lagoon placement, or offshore stockpiling at borrow sites within the 3-mile limit from the shore. Additional Tier 1–4 testing may be required prior to Corps and EPA approval of the SAP Results Report. Additional Tier 3 testing would be required prior to EPA and Corps approval of any offshore disposal to ensure that the material is suitable and is in compliance with the U.S. Ocean Dumping Regulations.

San Elijo Lagoon is an actively used recreational amenity for the public in San Diego’s north county, as described in Section 3.1 (Land Use/Recreation). Public use is concentrated on the Reserve’s hiking trails, near the Nature Center, and west of the Reserve on Cardiff State Beach. The lagoon’s trail system is surrounded by private lands, and public access to the lagoon is limited to daylight hours. No direct trail access is available to and from the lagoon to the beach. The beach area north and south of the inlet attracts sunbathers, swimmers, surfers, and other beach enthusiasts.

Vectors

The term “vector” is used to denote a carrier of disease organisms. The vector may be purely mechanical (houseflies spreading enteric organisms), or biological, wherein the disease organism multiplies or undergoes change within the vector (the development of encephalitic viruses in mosquitoes). San Elijo Lagoon has long been a mosquito breeding site. As tidal circulation within the lagoon became more restricted over the past several decades, the east basin area became dominated by freshwater cattails resulting in breeding habitat for mosquitoes.

The lagoon has multiple species of mosquitoes, including *Culex tarsalis*, which is a known vector for encephalitis and West Nile Virus. This mosquito is predominant in the summer months and thrives in freshwater and brackish water seasonal marsh areas. Other species include black salt marsh mosquito (*Aedes taeniorhynchus*) and tule mosquito (*Culex erythrothorax*).

Both the banded foul water mosquito (*Culex stigmatosoma*) and southern California malaria mosquito (*Anopheles hermsi*) have also been documented in San Elijo Lagoon (SELC 2012).

There are a number of receptors sensitive to vector-borne diseases in the vicinity of the lagoon, such as people at beach facilities; people recreating at the lagoon; people at schools, child care centers, and residences surrounding water body. The Nature Center within the Reserve hosted over 18,800 visitors in 2011 and the SELC Education Program provided outdoor programs to students and teachers from various parts of San Diego County over that same period (SELC 2012). Without comprehensive steps to limit their exposure to vector-borne disease, the over 20,000 beneficiaries of these important recreational and education programs, including many residing outside San Diego County, would be at risk.

The conditions that tend to favor mosquitoes are stagnant, fresh or brackish water with minimal circulation, narrow channels or a limited circulation system, and dense vegetation. Key management strategies to control vector populations in water bodies focus on breaking the larval life cycle before they mature and become adult mosquitoes. Strategies focus on increasing water circulation and wave action, varying water levels, decreasing vegetation such as cattails, decreasing nutrients and reducing water temperatures, and providing improved access for natural predators of larval and adult mosquitoes (aquatic and airborne) to potential breeding areas. Aerial larvicide treatments can also become more effective if channels are extended through dense vegetation that may otherwise prevent the larvicide from reaching the water surface. Common natural predators of aquatic mosquito larvae include *Gambusia* (“mosquito fish”), native killifish and stickleback, other small native and nonnative fish species, and the aquatic nymph stages of dragonflies and damselflies (*Odonata*). Predators of adult mosquitoes include frogs, bats, swallows, purple martins, and many other insectivorous bird species.

The east basin of the lagoon is the area of primary concern for mosquitoes. This basin is characterized by static water levels for long periods of time (i.e., no tidal flushing), promoting mosquito egg oviposition and larval and pupal survival and development. As a result, substantial adult mosquito populations may be generated every 7 to 10 days. Accumulation of warm anaerobic, organically rich waters attract certain standing-water mosquitoes, such as *Culex* spp. In contrast, flowing water maintains higher oxygen levels, which contributes to reducing toxic metabolites. Both of these factors enhance the survival of aquatic predators of mosquito larvae (SELC 2012).

Prior to residential developments along the southern border of the Reserve, County of San Diego personnel conducted controlled burns in the east basin to eliminate cattails and other emergent vegetation that might provide refuge to mosquito populations. Newspaper articles as early as 1987 described the need to drain stagnant water from the lagoon to reduce mosquito breeding

habitat. In 2003, San Diego County Vector Control Program (SDCVCP) first applied a biological-based granular mosquito larvicide by helicopter in the east basin of San Elijo Lagoon. The SDCVCP has been regularly applying aerial larvicide at San Elijo Lagoon since 2004 (SELC 2012) as well as conducting site specific treatments at “flare-up” areas with high production of adult mosquitoes. The product used currently is a combination of *Bacillus thuringiensis israelensis* (Bti) and *Bacillus sphaericus* (Bs) fused to a corn cob granule. It is considered harmless to humans, fish, and other wildlife.

Wildland Fire Hazards

The California Department of Forestry and Fire Protection (CAL FIRE) has identified the southern and eastern portions within and immediately surrounding the project study area as very high fire hazard severity zones (CAL FIRE 2009). Specifically, CAL FIRE mapping identifies the southern side of the Reserve bordering Solana Beach’s northern city limits and the eastern area toward the community of Rancho Santa Fe in the unincorporated area of San Diego County. The vegetation in this area of the lagoon is dense and consists of woody, coastal sage scrub, maritime chaparral, south slope chaparral, and scrub/oak/chaparral mix with shrub sizes ranging from 5 to 15 feet in height (County DPR 2009). Wildland fire safety concerns have been raised due to the presence of native and exotic vegetation in the project area and within proximity to residences. Public safety issues and concerns were raised again after the 2007 Witch Creek fire, which began in Ramona and extended south and east into the community of Rancho Santa Fe.

County DPR, SELC, and the City of Solana Beach Fire Department developed the *San Elijo Lagoon Ecological Reserve Vegetation Management Plan* to address risks associated with fire to lives and property in the Solana Beach neighborhoods adjacent to the project area and to protect the public’s interest in the Reserve (County DPR 2009). The Vegetation Management Plan provides a comprehensive plan for locations where wildland interface exists in the Reserve and guides the removal of exotic vegetation and thinning of native vegetation in select areas to help reduce risks. The Vegetation Management Plan sets methods for vegetation thinning activities and also discusses erosion control, as well as the methods for removal of invasive exotic plant species.

Materials Disposal/Reuse Study Area

The materials disposal/reuse project component would place suitable dredged materials from the lagoon within the coastal environment either offshore, nearshore, or onshore the beach. These areas, by nature, are not susceptible to hazards related to vectors or wildland fires. As noted, chemical analysis of upper level material identifies some low levels of DDD, DDE, and DDT, but concentrations are not high enough to trigger a public health concern and there would be no

risks introducing hazardous materials into the environment (Webb 2012). However, materials from the uppermost layers of the lagoon that contain these low levels of contaminants are generally not suitable for reuse due to their relatively fine grain size. For this reason, these materials would be placed in the overdredge pit in the central basin. (Alternative 2A and Alternative 1B) or at LA-5 (Alternative 1A). Other dredged material appears to be chemically compatible for the beneficial reuse options being considered (i.e., onshore, nearshore, or offshore staging) (M&N 2013). Therefore, this discussion focuses on recreational safety and vessel safety.

Recreational Safety

A primary concern specifically associated with placement of material on a beach or in the ocean is ensuring public safety during construction. Recreational safety is provided by lifeguard services. The California Department of Parks and Recreation provides lifeguards at the state beaches, and the cities of Encinitas and Solana Beach provide lifeguards at beaches within their jurisdiction. Bluff erosion remains a public safety concern, especially along the Encinitas and Solana Beach shoreline areas. Several fatalities and injuries due to bluff collapse have occurred within and adjacent to the Encinitas and Solana Beach materials placement sites (Corps 2012).

Water pollution stemming from storm drain outlets and from the outlets of coastal lagoons has resulted in posting at and/or occasional closing of beaches to protect public recreational safety. Bacteria indicators are monitored at storm drain outlets and adjacent surfzone and in the surfzone offshore coastal lagoons. With few exceptions, bacteria concentrations measured in the surfzone up- and down-current of the storm drain outlets have been within state standards for water-contact recreation.

Scarps (or escarpments) develop naturally along beach profiles and vary in height due to substantial changes in the beach profile (i.e., drastic drop in elevation). Scarp height is a function of the breaking wave height and the elevation of the existing beach berm. Large scarps may result in safety hazards due to substantial changes in the beach profile (i.e., drastic drop in elevation).

Vessel Safety

During materials placement, vessel safety is a concern as operations may include a variety of ocean-based barges, monobouys, and discharge pipelines traversing waters used by ocean-going vessels. Commercial boats, fishing boats, and recreational vessels currently traverse the overall project area along the San Diego region's coast. Most vessels operate out of Oceanside Harbor, Mission Bay, and San Diego Bay.

3.15.2 CEQA THRESHOLDS OF SIGNIFICANCE

A significant impact related to hazardous materials would occur if implementation of the proposed project would:

- A. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- B. Substantially increase public safety hazards for people surfing, swimming, walking, or otherwise recreating in and around the lagoon and the beach areas;
- C. Create a substantial public health hazard from management or disposal of dredged/excavated material;
- D. Substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances (threshold considered for lagoon restoration only); or
- E. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands (threshold considered for lagoon restoration only).

The hazardous materials and public safety CEQA thresholds were derived from a combination of sources, including Appendix G of the CEQA Guidelines and County guidelines for determining significance for vectors, wildland fire and fire protection, and hazardous materials and existing contamination. Thresholds such as B and C were specifically developed in consideration of specialized or unique conditions requiring attention due to the nature of the project or the location within the lagoon and nearby beach areas.

3.15.3 ENVIRONMENTAL CONSEQUENCES

Lagoon Restoration

Alternative 2A–Proposed Project

Hazardous Materials and Public Safety

No known hazardous materials sites are located within the lagoon or the lands immediately adjacent the project study area. Restoration activities would include dredging of materials within

the lagoon. Sediment quality investigations have been conducted on materials to be dredged, and it was determined that some areas within the uppermost layer contain some harmful chemicals (i.e., DDD, DDE, and DDT). As detailed in the SAP (Appendix A), based on initial and follow-up correspondence with EPA (Webb 2012) and the Corps, the levels of contaminants found in the marsh sediments (silts and clays) material were low enough not to trigger a concern for the on-site placement proposed (bottom of the overdredge pit and capped with remaining wetland soils dredged during construction). Chemistry of the material planned for beneficial reuse is appropriate and not considered a health concern issue. Consideration of health concerns were based on comparison of the detected contaminant levels with California Human Health Screening Levels (CHHSLs) as developed by the California EPA and Office of Environmental Health Hazard Assessment and detailed in the SAP (Appendix A) (M&N 2013). CHHSLs are concentration levels of chemicals that California EPA has determined to be below thresholds of concern for risks to human health (California EPA 2005). However, the material from these uppermost layers of the lagoon, which contain low levels of contaminants, is generally not suitable for reuse due to its relatively fine grain size. For this reason, these materials would be placed in the overdredge pit in the central basin. Following placement of this material, the overdredge pit would be capped by sand material dredged from the proposed inlet location, which would encapsulate the material and prevent it from being introduced into the water column or released into the environment (M&N 2013). Sediment quality investigation results are discussed in detail in Section 3.4 (Water and Aquatic Sediment Quality). Storage, handling, transport, emissions, and disposal of hazardous materials would occur in full compliance with local, state, and federal laws and regulations, such as Health and Safety Code, Sections 25500–25520 (PDF-11). **Therefore, there is a less than significant impact related to hazardous materials due to location or routine transport, use, or disposal of dredged/excavated materials (Criteria A and C) and no substantial adverse effect would result.**

Construction equipment would require a number of petroleum products such as fuel, hydraulic fluids, and lubricants for effective operation. Fuel replenishment would be required daily for most of the heavy equipment. Fueling and/or maintenance activities would occur at the staging areas away from these accessible areas (PDF-26), and the contractor would be required to prepare a Spill Prevention, Control, and Countermeasure (SPCC) plan for hazardous spill containment (PDF-3). Spills would be cleaned up in accordance with permit conditions.

During construction of Alternative 2A, heavy equipment and vehicles would be present in the project study area for lagoon restoration activities, including dredging within the lagoon and construction of the new inlet and associated CBFs. Heavy equipment would also be used to construct a new bridge along Coast Highway 101 to span the new inlet location. During off working hours, heavy equipment and vehicles in areas that could be accessed by the public would be secured in a general contractor's staging area and would not pose a safety hazard

(PDF-27). Construction areas would be staked and no construction zones defined (PDF-4). As necessary, access to portions of lagoon trails and beaches would be temporarily restricted to maintain public safety (PDF-5). Ongoing maintenance activities would be subject to these same safety precautions in an effort to reduce public safety hazards associated with heavy equipment operations to people surfing, swimming, walking, or otherwise recreating in and around the lagoon. Additionally, PDF-1 would require implementation of a public information program to assist nearby residents in understanding the purpose of the project and to disseminate pertinent project information. Incorporation of these safety project design features would protect publicly accessible areas within the lagoon (i.e., trails and the existing inlet) to ensure public safety is maintained.

The temporary controlled flooding that would be necessary during dredging operations to provide adequate water levels to support the barges would not create a hazard or public safety risk. Some trail closures would be required during flooding to ensure public safety as detailed in Section 3.1 (Land Use/Recreation). The temporarily flooded areas would be within current and historical areas of lagoon inundation. **Therefore, there would be a less than significant impact to public safety associated with lagoon flooding and dredging and bridge building (Criterion B) and no substantial adverse effects would result.**

Once Alternative 2A is constructed, the new inlet and associated CBFs would be a permanent project feature in the onshore and nearshore beach environment along Cardiff State Beach. The new inlet would be deeper and wider than the existing inlet. While large-scale changes to the patterns of currents are not anticipated with implementation of the new inlet, ebbing tidal currents would extend from the wetlands to the nearshore ocean in a gradually dissipating and spreading plume. This could create a hazard for beachgoers and swimmers. CBFs would extend to the msl line on the beach (and to the MLLW contour under the sand beach) and would be shoreward of the surf zone where wave breaking occurs under most conditions. Surfers and beachgoers are expected to stay away from the CBFs and the new inlet to avoid potential injury and would likely cross the channel farther seaward along the MLLW line where the inlet would become relatively shallow and wide. By themselves, the new inlet and CBFs do not pose a safety hazard. However, persons who stray too close to these areas may place themselves in situations that may result in injury should they be thrown against the CBFs, or swept into the inlet or a rip current. Limited lifeguard services are provided by the California Department of Parks and Recreation at Cardiff State Beach. The presence of lifeguards closer to the new inlet and CBFs would help reduce public safety hazards. Warning signs would also enhance public awareness to avoid potential safety hazards. Public unawareness is the greatest factor contributing to significant public safety hazards near the new tidal inlet and CBFs under Alternative 2A. **This would result in significant and substantial adverse impact to public safety associated with CBF installation (Criterion B).**

Vectors

Vector issues are an existing concern at the lagoon and are addressed routinely by SDCVCP, primarily via aerial application of granular larvicide. The potential for project impacts must be evaluated during the construction period, given phased water impoundment, and post-construction given modified habitats, channels and water areas.

During construction, multiple factors would serve to change the vector breeding conditions that currently exist throughout the lagoon. Temporary inundation of areas in the central and west basin during construction for Alternative 2A would raise the water level in impounded areas to an elevation of +5 or +6 feet NGVD (Figures 2-16 and 2-17). This elevation would be higher than existing water levels and, although impounded, water within the diked areas is not expected to result in increased vector concerns. Mosquito larvae are usually concentrated in the water surface tension zone (meniscus) where water contacts leaves and stems; raising the water level breaks up this larval harborage and prevents adult production. Water used to inundate flooded areas would be captured during high tide inflow from the ocean, increasing the overall salinity within the impounded areas. As flooding is initiated, vegetation extending out of the water would be cleared from the lagoon, removing cattails and other sheltering areas for mosquito larva. The flood water levels above vegetation, as well as areas that would be cleared, would substantially reduce the amount of aquatic vegetation available for larva protection and would allow predators, such as aquatic invertebrates, fish, birds, and dragon flies to access and feed on the larva more efficiently.

Once flooded, large portions of the lagoon would be an expanse of open water more subject to wind wave action. While in this coastal area there is a prevailing wind, it is currently blocked by dense vegetation and a lack of contiguous water. The wind-activated, moving waters would be less conducive to successful mosquito breeding. The engines and propellers of dredging equipment and support vessels moving from place to place in the impoundment areas would provide manual circulation below the water surface. The hydraulic cutterhead suction dredge would not generate substantial turbidity and would minimize nutrients from suspended sediment in the water column. This would reduce the ability of the larva to feed during the dredging period and maximize the ability of sight-feeding predators to find the larva. Overall, the lagoon would be far less conducive to mosquitoes as vegetation would be removed, water salinity increased, and wind action and channel design would increase circulation.

Outside of diked and deeply inundated areas, the lagoon would remain open to tidal action and freshwater inflow as under current conditions. Conditions in the east basin would remain generally the same during Phases 1 and 2 of construction (Figure 2-16). The existing CDFG dike would be modified to control water flowing west to east and to maintain elevation 6 feet NGVD

in that central basin. In Phase 3, the dike would be located at I-5 but still functioning to keep the central basin at 6 feet NGVD. Water would be conveyed from east to west over the dike so that elevations on the east side would remain 5 feet NGVD or lower (current conditions). Thus, freshwater flows heading to the ocean would not be impounded in the east basin and water would not increase retention time in the cattails, or create new sources of mosquito breeding. By Phase 4, the dike would be removed and tidal circulation would extend east of I-5. Control measures in the east basin would continue as currently performed.

During construction there would be heavy equipment, construction vehicles, and other tools/storage facilities along the edges of the lagoon. These locations are focused on staging areas so they do not rim the entire lagoon. There is some potential for rainwater or other sources to become impounded in small containers or wheel ruts. Given the rapid mosquito life cycle, an impoundment of 7 to 10 days can allow for successful breeding. As described in Table 2-24, a biological monitor would be on-site during construction. That person would perform a variety of tasks to ensure construction remains within the ROW and complies with all design features, standard regulations, permit conditions, construction specifications, and mitigation measure. As noted in PDF-13, one responsibility will be confirmation that the contractor is satisfying construction specifications dictating no ponded water. They would also be empowered to release small containers of water to eliminate breeding conditions. A construction specification will also be applied requiring Vector Control staff to have access throughout construction for their routine monitoring and treatment activities.

After implementation, Alternative 2A would result in improved circulation throughout the lagoon, including the east basin. Channels would be widened and extended into aquatic vegetation in the central and east basins, and much of the freshwater marsh currently in the east basin would be removed. The primary change in habitat distributions under Alternative 2A would be an increase in open water areas/tidal channels (74 acres proposed) and mudflat habitat (102 acres proposed) within the lagoon compared to existing conditions (40 and 63 acres, respectively). Freshwater marsh in the lagoon, primarily monocultures of dense cattail, would be reduced by 36 acres and other marsh habitats (low-, mid-, and high-) would be reduced by 20 acres. Open water areas and tidal channels would be increased in all three lagoon basins compared to existing conditions. It is not possible to totally eliminate vectors in the lagoon because of the overall size and habitat diversity, but the restoration provided by Alternative 2A would decrease habitats good for mosquito propagation and harborage (dense expanses of freshwater and saltwater marsh) and increase unfavorable habitats for mosquitoes (open water, channels within marsh areas, tidal mudflats, regularly inundated/tidally drained areas).

The subtidal basin would be created and the main channel would be enlarged and straightened, increasing the ability of waves and ripples to be created on the water surface. In addition,

enhanced tidal action under Alternative 2A would lead to a much larger area inundated at high tide, and a smaller area inundated at low tide. More open water and the dynamic hydrologic cycle of tides would interrupt the mosquito reproduction process, and would lead to substantially increased mortality of eggs, larvae, and pupae. Eggs laid on water during one point of the tide may be left totally high and dry during the subsequent low tide, or delivered directly to the ocean by tidal currents (SELC 2012). Increased tidal action under Alternative 2A would also result in other benefits for mosquito abatement, including increased salinity, which reduces the ability of these vectors to reproduce; quick draw-down, which prevents establishment of stagnant ponds on the lagoon edges; and habitat conversion with less emergent plant growth in the east basin resulting in better circulation of water, improved access for SDCVCP staff, and improved effectiveness of vector control measures.

The higher volume of cooler ocean water entering more expansive areas of the lagoon would create a poor temperature-based environment for larvae survival. Existing nutrient-rich soils currently cause the lagoon system to become eutrophic and create good breeding habitat/food for larva. Large volumes of this soil would be removed as part of Alternative 2A through shallow grading/dredging. Alternative 2A should eliminate or significantly reduce the need for periodic aerial larvicide treatments during the summer months, thereby substantially reducing expenditures by SDCVCP (SELC 2012).

Implementation of Alternative 2A would result in a less-conducive vector breeding condition and reduce the public health and safety risk associated with mosquito-borne diseases. Substantial increases in human exposure to vectors are not anticipated either during construction or after implementation of Alternative 2A. For this reason, implementation of Alternative 2A would not substantially increase human exposure to vectors, such as mosquitoes, that are capable of transmitting significant public health diseases or creating nuisances and no significant or substantial adverse impacts would occur, rather **beneficial project impacts would occur (Criteria B and D)**.

Wildland Fire Hazards

As previously discussed, the southern and eastern portions of the project study area are located adjacent to lands that have the potential to support wildland fires. Alternative 2A would result in vegetation clearing and grubbing activities within the lagoon boundaries; however, neither construction nor maintenance activities would occur within the wildland interface areas. Lagoon restoration and maintenance activities would not conflict with implementation of the Vegetation Management Plan. In addition, restoration activities would not introduce new or permanent structures within the lagoon area that would create new fire hazards. While fire hazard risks associated with construction equipment are not anticipated, a variety of project design features

would be implemented by the contractor (Section 2.10). Specifically, construction equipment used in restoration and maintenance activities would have fire suppression equipment on board or at the worksite (PDF-28), heavy equipment operators would be trained in appropriate responses to accidental fires (PDF-29), and emergency communication equipment would also be available to site personnel. **Impacts associated with wildland fires would not be substantially adverse and would be less than significant (Criterion E).**

Alternative 1B

Alternative 1B would retain the existing inlet location and would not require construction of new structures on the beach or within the lagoon inlet area (i.e., CBFs). During construction, implementation of the project design features, such as an SPCC) plan for hazardous spill containment (PDF-3), equipment fueling/maintenance in designated locations away from accessible areas (PDF-26), securing equipment during off-hours (PDF-27), defining and staking construction areas (PDF-4), temporarily restricting access to portions of lagoon trails and beaches (PDF-5), and implementation of a public information program (PDF-1) would help to reduce public safety hazards to people surfing, swimming, walking, or otherwise recreating in and around the lagoon mouth to less than significant. Ongoing maintenance activities would be subject to these same safety precautions. The discussion of hazardous material safety and wildland fire hazards and associated regulatory requirements and project design features for Alternative 2A are applicable to Alternative 1B. **Impacts related to hazardous materials, public safety, and wildland fires would be less than significant (Criteria A, B, C, and E) and would not be substantially adverse.**

Similar to Alternative 2A, Alternative 1B would increase tidal influence and salinity in the east basin. Channels would be widened, straightened, and extended into vegetation, allowing for wind-driven wave action and predator access to areas currently providing shelter for larval mosquito populations. Temporary flooding during construction of Alternative 1B would also result in increased wave action, circulation, and salinity, and a decrease in dense visible vegetation. Nonflooded areas would remain open to tidal action and freshwater inflow as under current conditions, or under the designed enhanced channel configuration proposed under Alternative 1B. Habitat distributions under Alternative 1B would be an increase in open water areas/tidal channels (67 acres proposed) and mudflat habitat (71 acres proposed) within the lagoon compared to existing conditions (40 and 63 acres, respectively). Most of the increase in open water/tidal channels and mudflat habitat would occur in the central and east basins. Conditions during and after construction are anticipated to be better for mosquito control than under current conditions. Implementation of Alternative 1B would facilitate the control of vectors at the lagoon and reduce the public health and safety risk associated with vector-borne diseases. Substantial increases in human exposure to vectors are not anticipated during construction or after

implementation of Alternative 1B. **No significant or substantial adverse impacts would occur; rather, beneficial project impacts would occur (Criteria B and D).**

Alternative 1A

Alternative 1A would result in impacts similar to those described for Alternative 1B related to public safety and wildland fires. Alternative 1A would retain the existing inlet location and would not require construction of new structures on the beach or within the lagoon inlet area (i.e., CBFs). During construction, implementation of the project design features, such as an SPCC plan for hazardous spill containment (PDF-3), equipment fueling/maintenance in designated locations away from accessible areas (PDF-26), securing equipment during off-hours (PDF-27), defining and staking construction areas (PDF-4), temporarily restricting access to portions of lagoon trails and beaches (PDF-5), and implementation of a public information program (PDF-1) would help to reduce public safety hazards to people surfing, swimming, walking, or otherwise recreating in and around the lagoon mouth to less than significant. Intermittent maintenance activities would be subject to these same safety precautions. The discussion of hazardous material safety and wildland fire hazards and associated regulatory requirements and project design features for Alternative 2A are applicable to Alternative 1A. **Impacts related to hazardous materials, public safety, and wildland fires would be less than significant (Criteria A, B, C, and E) and would not be substantially adverse.**

Under Alternative 1A, the main feeder channel throughout the site would be enlarged and redirected just west of I-5, the main tidal channel would be extended farther into the east basin, existing constricted channel connections would be cleared and enlarged, and two new channels would be created through the CDFW dike to allow tidal and fluvial connections. The tidal prism of Alternative 1A would be slightly increased compared to existing conditions. Existing habitat areas would essentially remain intact, although some freshwater habitat areas in the east basin are anticipated to convert to more saltwater-based communities due to enhanced tidal influence and the resulting changes in inundation frequencies. Because this alternative would have the least increase to tidal flow and least change to the east basin, the benefits associated with an improved vector controlled environment would not occur, but neither would the vector control environment worsen over the existing conditions. **No significant or substantial adverse impacts related to vectors would occur (Criteria B and D).**

No Project/No Federal Action Alternative

Under the No Project/No Federal Action Alternative, impacts related to public safety and risks associated with wildland fires would remain similar to existing conditions. Impacts would be less than significant for both of these issues. However, the conditions at the lagoon associated with

vectors would continue to be exacerbated without implementation of the proposed project or alternatives. Under the No Project/No Federal Action Alternative, no actions would be taken to improve the tidal circulation within the east basin and conditions would continue to accumulate stagnant waters that attract mosquitos, thereby increasing the chance for exposure of vector-borne disease in the nearby communities. While this issue is currently being addressed by the SDCVCP, no long-term plan is in place, besides the proposed project, to help reduce vector-related issues. Although **no new impacts (Criteria A through E) or substantial adverse effects would be anticipated** under the No Project/No Federal Action Alternative, conditions would remain unchanged.

Materials Disposal/Reuse

The materials disposal/reuse project component would occur within the coastal offshore, nearshore, and onshore beach environment that is not susceptible to hazards related to vectors or wildland fires. Therefore, these issues are not addressed further.

For all project alternatives, it should be noted that dredged materials have been tested and it was determined that some areas within the uppermost layer contain detectible levels of some harmful chemicals (i.e., DDD, DDE, DDT); however, as described earlier, these low levels are not substantial enough to cause a public health concern based on initial correspondence with EPA (Webb 2012). The material appears to be chemically compatible for the beneficial reuse options being considered (i.e., onshore, nearshore, or offshore staging) (M&N 2013). However, the uppermost layers of material would not be suitable for reuse based on the relative fine grain size. Under Alternative 2A and Alternative 1B, this material would be disposed of in an overdredge pit in the central basin. Following placement of this material, the overdredge pit would be capped by sand material dredged from the proposed inlet location, which would encapsulate the material and prevent it from being introduced in the water column or released into the environment (M&N 2013). For Alternative 1A, dredged material would be disposed of in LA-5. Preliminary soil investigations included in the SAP also suggest the material would be suitable for disposal at LA-5; however, a formal determination from EPA and the Corps would be required prior to disposal. Discussions in the SAP regarding offshore disposal at LA-5 occurred for background and to understand its capacity limitations, but formal submittals requesting authorization to place sand would be made upon selection of a final alternative. If disposal at LA-5 were to be part of the selected alternative, then supplemental Tier 3 analysis would be required. Should the materials be determined not suitable for disposal at this location, the material would be sequestered on-site in built transition or nesting areas. Sediment quality investigation results are discussed in detail in Section 3.4 (Water and Aquatic Sediment Quality).

Contaminated materials are not anticipated to exist within dredge areas according to results of previous testing (M&N 2013); however, the possibility exists that other unforeseen wastes and hazardous materials could be dredged from the lagoon due to contamination from past sewage spills, potentially illegal dumping of hazardous materials, or other sources. **Therefore, under CEQA Alternative 2A, Alternative 1B, and Alternative 1A could create a public health hazard from management or disposal of dredged/excavated material and this would be a potentially significant effect (Criterion C). Because prior testing showed that there was no contamination at levels that would cause a public health hazard in the proposed dredge material, no substantial adverse effects could result per NEPA.**

Alternative 2A–Proposed Project

Vessel Safety

Under Alternative 2A, materials could be placed in the offshore environment in SO-5 and/or SO-6 and/or area beaches, using a monobuoy and barges to transfer material to those sites. The primary hazard associated with offshore placement is vessel safety during the transport of materials. The potential for a vessel to collide with the barge or a support vessel would be remote as vessels would be equipped with markings and lights in accordance with established USCG regulations. The location and operational schedule of the barge would be published in the USCG “Local Notice of Mariners” to inform local boaters of the presence and location of the barge (PDF-51). The travel speed would also be slow (approximately 5 knots) during the transport of sand to placement sites. To maintain vessel safety, a 300-foot-radius buffer area would be established around the monobuoy in offshore waters (PDF-51), to allow proper anchoring and pump line operation. To ensure that no vessels would enter this restricted zone, the anchoring area would be included in the “Local Notice to Mariners.” All pipelines used during offshore stockpiling efforts, including both floating and submerged, would be clearly marked as “navigational hazards” (PDF-50). There would be a short-term and localized increase in vessel traffic in the area associated with project construction with a limited distance of travel to set and remove the pipeline. Therefore, Alternative 2A would not create navigation hazards or result in unsafe conditions for vessel traffic. **Public health and safety impacts associated with offshore placement of materials under Alternative 2A would be less than significant and no substantial adverse impacts would occur (Criteria B and C).**

Public/Recreational Safety

None of the potential beach placement sites are included on a list of hazardous material sites. For nearshore and onshore placement sites, portions of the beach directly affected by active materials placement activities may be closed temporarily (PDF-53). Closing the area to the public would

prevent potential unsafe conditions for the public associated with the presence and operation of heavy equipment used to move the sand around on the beach. Adjacent stretches of beach not directly affected by placement activities, such as those areas through which pipeline may extend but where sand is not directly being placed, would remain open to public access and recreational activities (PDF-6). Depending on the beach site and material excavation rates, up to 1,000 feet of beach may be closed per day in a specific location. As sand placement activities shift along the beach, those areas in which sand placement has been completed would be reopened to public use. Prior to opening areas of beach with placed materials, the material would be spread and checked for potential hazards (e.g., foreign objects in the sand) (PDF-57). Horizontal access along the back beach would be maintained at sites with no alternative access (e.g., where a wet beach abuts bluffs), with temporary closures occurring as necessary to complete sand placement to the back edge of the beach (PDF-60). Lifeguard services would remain during construction and mobile lifeguard towers would be temporarily relocated if necessary (PDF-54), and sand would be placed to avoid blocking line-of-sight at permanent lifeguard towers (PDF-55).

Ocean areas directly adjacent to sand transport/placement equipment and activities may also be temporarily closed to ensure public safety. Buffers around temporary monobuoys and ocean placement sites would be maintained to avoid water recreation users and vehicle safety hazards. Additionally, the safety-related project design features described above would provide necessary safety measures in the vicinity of the nearshore and onshore placement sites to ensure public safety is maintained at all times. Fueling and/or maintenance activities would occur at the staging areas away from the beach, and the contractor would be required to prepare an SPCC plan for hazardous spill containment (PDF-3).

Potential safety impacts due to increased scarp heights may occur. As a project design feature, the Marine Safety departments in the cities of Encinitas, Solana Beach, and San Diego would post signs advising the public of the presence of scarps should they develop on the beaches where sand is being placed (PDF-56). These scarps often occur naturally in the absence of beach nourishment and are usually short term and localized and would not be considered a significant effect of the project.

Onshore materials placement at Encinitas and Solana Beach could result in potential public health and safety benefits by increasing beach widths. This could increase the distance between beachgoers and dangerous bluffs, and may, in the short term, reduce the number of bluff failures affecting the public safety on the beaches.

Public health and safety impacts associated with nearshore and onshore placement of materials under Alternative 2A would not be substantially adverse and would be less than significant (Criteria A, B, and C).

Alternative 1B

Materials placement options under Alternative 1B would be very similar to those described for Alternative 2A. Alternative 1B would produce slightly less volume of dredged materials to be placed offshore, in the nearshore at Cardiff, or at onshore beach locations. This would result in similar impacts in the offshore, nearshore, and onshore placement sites, as described for Alternative 2A. **Public health and safety impacts associated with offshore, nearshore, and/or onshore placement of materials under Alternative 1B would not be substantially adverse and would be less than significant (Criteria A, B, and C).**

Alternative 1A

Under Alternative 1A, dredged materials would be disposed of offshore in LA-5 or used on-site in the nesting or transitional areas. The primary hazard associated with offshore placement is vessel safety during the transport of materials and this activity would be performed consistent with the project design features in Section 2.10, including publishing the location and operational schedule in the USCG “Local Notice of Mariners” (PDF-51) and the implementation of a 300-foot-radius buffer area around the barge lane in offshore waters to maintain vessel safety (PDF-52). **Public health and safety impacts associated with placement of materials under Alternative 1A would not be substantially adverse and would be less than significant (Criterion B and C).**

No Project/No Federal Action Alternative

No materials would be placed offshore, nearshore, or onshore under the No Project/No Federal Action Alternative. At some of the onshore placement sites, waves could continue to erode fragile bluffs. This deterioration is occurring under existing conditions. **Impacts from the No Project/No Federal Action Alternative would not be substantially adverse and would be less than significant (Criterion B and C).**

3.15.4 AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

Project design features have been incorporated throughout the project to minimize and avoid hazardous material and public safety hazards. Project design features also incorporate measures necessary to meet regulatory requirements and standards related to hazardous material safety. Project design features addressing hazardous materials and public safety include implementation of a SPCC plan for hazardous spill containment, equipment fueling/maintenance in designated locations away from accessible areas, securing equipment during off-hours, defining and staking construction areas, providing fire suppression equipment onboard or at the worksite, and training

heavy equipment operators in appropriate responses to accidental fires. Vessel safety project design features include publishing the location and operational schedule of the barge in the USCG “Local Notice of Mariners”, establishing a 300-foot-radius buffer area around the monobuoy in offshore waters, and marking pipeline used during materials placement on adjacent beaches and offshore stockpiling efforts as “navigational hazards.” Other public safety project design features require temporarily restricting access to portions of lagoon trails and beaches, implementation of a public information program, relocating mobile lifeguard towers, and maintaining line-of-sight from all lifeguard towers. There would be no significant impact associated with vectors so no mitigation measures are warranted. Impacts from construction of a new inlet would be substantially adverse and significant. Significant impacts would also occur to public health hazards from disposal of dredged materials. Mitigation for those impacts is discussed below.

Lagoon Restoration

The following mitigation measures are needed to reduce impacts associated with construction of a new inlet under Alternative 2A:

- HAZ-1 The project applicant shall continue coordination with California Department of Parks and Recreation to relocate the mobile lifeguard tower (State Lifeguard Tower No. 6) closer to the new inlet location.
- HAZ-2 The project applicant shall continue coordination with California Department of Parks and Recreation to install signs at the new inlet to enhance public awareness to avoid potential safety hazards associated with the new inlet location and associated CBFs.

Materials Disposal

The following CEQA mitigation measure is needed to reduce impacts associated with public health hazards from management or disposal of dredged/excavated material under Alternative 2A, Alternative 1B, and Alternative 1A:

- HAZ-3 A sediment management plan shall be developed and implemented to test dredged materials for proper placement in the overdredge pit or for off-site transport and proper disposal and to be in compliance with local, state, and federal regulations. The plan shall specify that if unknown contamination or other buried hazards are encountered during dredging, procedures must be carried out according to applicable regulations. Any material encountered that appears to contain contaminants shall be handled in accordance with local, state, and federal guidelines, and permit conditions.

3.15.5 LEVEL OF IMPACT AFTER MITIGATION

CEQA: Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce public safety risks associated with the new inlet and CBFs under Alternative 2A to less than significant.

With implementation of HAZ-3, the potentially significant CEQA impacts would be reduced to a less than significant impact related to upset and accident conditions involving the release of hazardous materials into the environment for Alternative 2A, Alternative 1B, and Alternative 1A.

The No Project/No Federal Action Alternative would result in less than significant impacts related to hazardous materials and public safety for both lagoon restoration and materials placement project components and no mitigation measures are required. The benefits to vector control (less conducive conditions) would not be realized.

NEPA: Implementation of Mitigation Measures HAZ-1 and HAZ-2 would reduce substantial adverse public safety risks associated with the new inlet and CBFs under Alternative 2A.

Implementation of the No Project/No Federal Action Alternative would not result in substantial adverse impacts related to hazardous materials and public safety for both lagoon restoration and materials placement project components. The benefits to vector control (less conducive conditions) would not be realized.

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